

WHAT IS CLAIMED IS:

1. A winding support structure for use with a superconducting rotor, said support structure comprising:

an inner support ring;

an outer support ring arranged around an outer circumference of said inner support ring;

first and second support blocks coupled to said outer support ring; and

a lamination coupled to said first and second support blocks so that a slot is defined between said support blocks and between said outer support ring and said lamination to receive a portion of a winding.

2. The winding support structure of claim 1 wherein said inner support ring is a solid ring.

3. The winding support structure of claim 2 wherein said outer support ring is a split ring.

4. The winding support structure of claim 3 wherein said outer support ring expands to produce a radially outward force against said support blocks when said inner support ring is moved axially with respect to said outer support ring.

5. The winding support structure of claim 1 further comprising another inner support ring, another outer support ring arranged around an outer circumference of said another inner support ring, said another outer support ring being coupled to said first and second support blocks.

6. The winding support structure of claim 1 wherein a clearance space in said slot is filled with a RTV.

7. The winding support structure of claim 1 further comprising a third support block coupled to said outer support ring to define another slot between said second and third support blocks to receive another portion of said winding.

8. A method of forming a winding support structure for use with a superconducting rotor comprising:

providing a lamination;

coupling first and second support blocks to said lamination;

providing an inner support ring and an outer support ring around an outer circumference of said inner support ring; and

coupling said lamination and said support blocks to said outer ring to define a slot between said support blocks and between said lamination and said outer ring to receive a portion of said winding.

9. The method of claim 8 further comprising applying a RTV into a clearance space in said slot.

10. The method of claim 9 further comprising arranging wedges respectively between adjacent bars forming said winding prior to applying said RTV into said clearance space.

11. The method claim 10 further comprising removing said wedges after applying said RTV into said clearance space, and applying additional RTV in a space where wedges were removed.

12. The method of claim 8 wherein coupling said lamination and said support blocks to said outer support ring comprises pulling said winding to said outer support ring and tying said winding to said inner and outer support rings.

13. The method of claim 8 wherein providing an inner support ring and an outer support ring comprises providing a solid ring and a split ring, respectively, said outer support ring being capable of expanding to produce a radially outward force against said support blocks when said inner support ring is moved axially with respect to said outer support ring.

14. The method of claim 8 further comprising providing another outer support ring around an outer circumference of another inner support ring and coupling said another outer support ring to said first and second support blocks.

15. The method of claim 8 further comprising coupling a third support block to said outer support ring to define another slot between said second and third support blocks to receive another portion of said winding.

16. An apparatus for use with a superconducting rotor comprising:

an inner support ring;

an outer support ring arranged around an outer circumference of said inner support ring;

first and second support blocks coupled to said outer support ring;

a lamination coupled to said first and second support blocks; and

a winding, a portion of said winding being arranged within a slot that is defined between said support blocks and between said outer support ring and said lamination.

17. The apparatus of claim 16 wherein said inner support ring is a solid ring and said outer support ring is a split ring.

18. The apparatus of claim 17 wherein said outer ring expands to produce a radially outward force against said support blocks and said winding when said inner ring is moved axially with respect to said outer ring.

19. The apparatus of claim 16 wherein a clearance space in said slot is filled with a RTV.

20. The apparatus of claim 16, further comprising another inner support ring and another outer support ring arranged around an outer circumference of said another inner support ring, said another outer support ring being coupled to said first and second support blocks.

21. The apparatus of claim 16 further comprising a third support block coupled to said outer support ring to define another slot between said second and third support blocks and between said outer support ring and said lamination, another portion of said winding being arranged in said another slot.